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HASTY NOTES
ON
TREES AND SHRUBS
OF
NORTHERN EUROPE AND ASIA.

BY CHARLES GIBB, ABBOTTSFORD, QUEBEC.

*A Paper from the Report for 1883 of the Montreal
Horticultural and Fruit Growers' Association
of Province of Quebec.*

MONTREAL:

"WITNESS" PRINTING HOUSE, ST. JAMES STREET WEST.

1883.

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Botanic Garden.

HASTY NOTES ON TREES AND SHRUBS OF NORTHERN EUROPE AND ASIA.

BY CHARLES GIBB, ABBOTTSFORD, QUE.

The experience of the Russian Horticulturists is just like our own. They have searched Central and Western Europe for new species, and have found among the many tried a few hardy and valuable. They have searched for new species on this Continent, and in some instances, like ourselves, have received the Southern forms of hardy species. Have you the Ash-leaved Maple? I ask Dr. Regel, the Director of the Botanic Gardens at St. Petersburg. Yes, but it is not hardy here. It is the only street tree in Winnipeg, I replied. Then I have some Southern form, he said. Yes, such is his experience and ours, and such must continue to be our disappointing experience until we establish direct communication with our like climates in the old world. The Russian Botanists had tried to find us years ago. They had endeavored to get into correspondence with the Botanists of the colder parts of Canada through their Consul at New York. They failed in this, but turned their attention to the cold climates eastward to the Pacific.

In the Imperial Botanic Gardens at St. Petersburg, we find the flora of the cold inter-continental climates of Eastern Russia, Siberia, Northern Turkestan, Soongaria, Mongolia, Mantchuria, and Amur, our own like climates in the Old World.

Europe may well be proud of her Botanic Gardens. The large outlay of the European Governments seems to have been money well invested. Botany in its relation to Agriculture, Horticulture and Forestry is a science deemed too valuable to be suffered to remain untaught. Russia is in no way behind in this matter. At St. Petersburg what cannot be grown out of doors must be grown within, thence they have there the largest number

of species under glass in the world. Not only in the larger cities, Moscow, Warsaw and Kiev, but in the smaller towns like Kazan, Voronesh, Orel and Penza (the last not visited by us), we find Botanic Gardens such as we might feel proud to own.

A generation or two ago, when Loudon and Lindley were at work in England, the Royal Horticultural Society imported from all parts of the world the plants likely to be useful or ornamental in England. They sent agents to China. Robert Fortune, however, spent much of his time at Canton, almost in the tropics. He was not in search of plants suited to the climate of Quebec, and yet some of our best hardy shrubs were brought to light at that time. This was probably the age of greatest Horticultural interchange the mild temperate regions have ever seen, and upon it is largely based their present advanced horticulture; and yet this work has been only of minor use to us.

In the tropics, and in the sub-tropical climates, the British Colonies have taken the lead in this matter of Botanic Gardens: wherever there is a Colony of any size there almost always is a Botanic Garden. Ceylon, India, (several), Singapore, Hong Kong, Queensland, Victoria, South Australia, New Zealand, Tasmania, Mauritius, Cape of Good Hope, and many others which I am not sure enough to note have their Botanic Gardens. Also in the West Indies, Jamaica, Trinidad and Demarara. The East and West Indies have interchanged for over 100 years! Read the reports of the Jamaica and other Botanic Gardens in the library of the Montreal Horticultural Society, and you will see that it is this Botanic interchange which has built up the present enormous export trade of the Tropics.

Now there are two points to which I wish to draw special attention.

I. We in the cold North have hardly begun to exchange with our like climates in the old world.

II. In Canada we have no Botanic Gardens.

As to exchange with our like climates, that will begin next fall. As to Botanic Gardens we must speak less hopefully. Our Horticultural Societies have done good

work. Our Universities do not neglect the science of Botany. We have some fair collections of trees, some Horticultural Gardens; but our Government has never seen the need of expenditure upon Botanic Gardens, as have the Governments of the European powers, and the Governments of other British Colonies. That this great Dominion of Canada, which stretches from the Atlantic to the Pacific, should be without a Botanic Garden, or a series of such gardens, is a fact without parallel in British Colonial history.

On the European Forestry plantations I must say a few words. The planted districts in France we did not pass through, but we obtained some idea of their method of work by visiting the Forest School at Nancy. That work one may get some idea of by reading their reports now in the Montreal Horticultural Society's library. In Germany we were continually passing extensive plantations of Scotch Pine (*Pinus silvestris*), bordered with Norway Spruce (*Abies excelsa*). The Germans are most economical in the use of wood, so that Pine so extensively planted must ere long become an article of export. But where are the hard woods needed for a thousand different purposes. Strange this exclusive planting of one species. So well are the forest plantations of Wurtemburg cared for, that the term "high culture" could with justice be applied to them. Evergreens are easily and cheaply propagated in the climate of Germany, and hence the method of planting adopted is that of close crowded planting, which of course, necessitates continued thinning.

In Russia the Government controls, in fact "works," a large proportion of the forests of the Empire. Of natural and planted forest the Government held in 1878 what is equal to 351,780,000 acres, exclusive of Siberia, besides about 51,590,000 acres of scrub at the far North. In 1878 they received from these forests an income of 10,648,000 roubles, and expended on new plantations, and working expenses, 6,400,000, leaving a profit for the year of 4,248,000 roubles, or about \$2,124,000. The extent of the plantations in Russia I cannot state. I know, however, that in three

of the Steppe Governments in Southern Russia, 22,880 acres have been planted within the last 8 years. There are 762 forest stations under the charge of a like number of Foresters, and as we journeyed over the prairie regions of Russia, we were continually coming across some Forestry Station with its surrounding plantations. Like the Beet sugar factories they are scattered all over the otherwise treeless plains. Unlike the plantations in Germany the Russians have planted not only their native forms of the Silvestris Pine and Norway Spruce, but largely of Pedunculata Oak, Ash and Basswood, and somewhat of Larch, Birch and Poplar, also in the Southern Steppe regions, Yellow Locust, Maple, Elm, Honey Locust and others.

The Imperial Forestry Association was in session at Moscow at the time of our visit. Delegates from all parts of European Russia had assembled under the Presidency of Dr. Arnold, Director of the Agricultural College at Petrovskoe Rasumoskoe, near Moscow. They meet biennially. We drove to the Government forests in coaches holding eight persons each, on side seats, back to back, driven by four stallions abreast. After luncheon I was called upon (my friend, Mr. Budd, was not present that day) to plant an oak, which is the joint property of the Canadian and United States Governments, and which may be worth several hundreds of dollars some centuries hence.

These Foresters are a fine set of men. It was one of this staff who, of his own accord, and at his own expense, accompanied us through the fruit-growing peasant villages of Kazan, sharing our discomforts and sleeping upon a bundle of hay when necessary.

As to the climates of the places I name, I must refer to my report on "Russian Fruits." Had I had more time I would have shown what these climates are, not from Meteorological tables, but from the flora in their Botanic Gardens. I would merely say that the mildness of Central Europe one may judge by the trees growing in the well-sheltered Botanic Gardens at Warsaw. Here, in latitude $52\frac{1}{2}$, we find Sophora Japonica 10 or 12 inches in diameter of trunk, growing from an old stump which had grown to a diameter of $2\frac{1}{2}$ feet; Juglans Regia had grown up with two

trunks, each 22 inches across; Tulip Tree, large and low branched, measuring 3 feet across its stump at the ground; Gingko, of 8 inches diameter; *Cornus mascula*, 25 feet in height, and thirty feet across its extended branches. The Horse Chestnut grows luxuriantly, and attains very large size at Warsaw.

I must say that these trees could not be grown in open exposure near Warsaw, for such is the ameliorating influence of a large city that the shelter it affords is equal to a difference of more than 50 miles in latitude. Proscau in Silesia, on account of its elevation of 720 feet, its open exposure and cold soil, is a rather more severe test of hardiness than the sheltered city gardens of Warsaw. North and East of Warsaw the climate soon becomes severe.

These notes I have written as addenda to a somewhat lengthy article on "Ornamental Trees," written by me last year for the seventh report of the Montreal Horticultural Society, so that what I say is merely a jotting down of things not said then.

Also before writing this, I had read Prof. Budd's notes upon the same subject before they were sent to press for the Montreal Horticultural Society's report. I have therefore avoided as far as I could repeating what has been said by Mr. Budd.

ACER.—Maple.

A. CAMPESTRE.—In my paper on "Ornamental Trees," I spoke of this as a tree or shrub that would prove hardy, if only we obtained our seed from Northern stock. Its beauty in Central Park and other places had made me wish we had its Northern forms. In the Imperial Botanic Gardens at St. Petersburg, we find a fine specimen, 18 ft. in height, apparently quite hardy. Another in the Botanic Gardens at Orel, 30 ft.; this latter, however, not cork-barked. In the grounds of the Agricultural College at Petrovskoe Rasumovskoe, near Moscow, their stock did not prove hardy. It is a native tree North of Kursk, in Central Russia, and runs thence North-West into the Baltic provinces. Farther South it grows to larger size. In the Botanic Garden at Warsaw there is a tree 12 inches in diameter of trunk, and at least 45 feet high.

not cork-barked, and in the Vienna Botanic Garden, 20 inches in diameter of trunk, and 40 feet or more across its extended branches. This, too, is not cork-barked. A tree capable of standing drouth well. I am at a loss to know what name to give this tree. English cork-barked Maple will not do for a tree worthless to us if grown from English seed; a tree not always cork-barked. Let us procure seed of this pretty shrub maple—seed of northern growth. We need direct communication with the Botanic Gardens, and Nurserymen and Seedsmen of our own like climates in Northern Europe.

A. NEGUNDO FOL. VARIEGATIS OR ARGENTUM.—This is a variety of our Ash-leaved Maple, with white edged foliage. It is very ornamental, and largely used, top-grafted in Central Europe. Farther North, grown as a low shrub with slight protection, otherwise not at all hardy in extreme climates.

A. PLATANOIDES. *Norway Maple.*—We did not find this tree grown in as large quantity in Russia as I had expected; nor did we even find specimens of it as large as our own sugar Maple. We find it as a street tree, and in gardens in all the Russian towns, but in limited quantity only. I noticed on the Volga, in the dry regions, that the trees growing there, trees looking just like the Platanoides of Western Europe, stood drouth remarkably well.

Var. DISSECTUM.—This pretty thing we found in severe climates, and in Vienna we saw a specimen 8 inches in diameter of trunk, with a dense, round head, nearly 30 feet in height, showing that it attains larger size than I had expected.

Var. FOL. DIGITALIS we saw only at the Pomological School at Proskau, in Eastern Prussia. A small tree with leaves still more cut than *Dissecta*.

Var. REITENBACHI a curious and a pretty tree. Leaves, dull brown in summer, and in spring, red. I do not remember seeing it North of Warsaw.

Var. SCHWERDLERII.—A Maple with young shoots bright red. Quite hardy at Riga says Mr. Wagner. I should not expect it to prove hardy farther north.

A. TARTARICUM. *Tartarian Maple.*—This tree is a native near Moscow, and may be seen in the Botanic Gardens and parks in the severest climates we visited. It is an “entire-leaved” Maple, grows into a large bush, and is decidedly ornamental. It is a pity that the trees of it for sale in the States are not to be relied upon for hardiness. We must get Northern stock.

Var. GINNALA (*tegumentosum* of some catalogues.)—A very pretty shrub Maple from Amur, noted as quite hardy at St. Petersburg, though only fairly hardy at Riga. My Moscow notes do not mention it. Hardy enough for Montreal, I should expect.

ÆSCULUS AND PAVIA—Horse Chestnut.

As we wandered from place to place we found decided variety in foliage of this tree. Mr. Budd used to note the thickness of leaf of the trees in some districts, as likely to stand the dry air of the Iowa prairies. The best collection we saw was in the Botanic Garden at Munich. Here special attention had been given to making a large collection. Specimen trees at St. Petersburg, Moscow, and Volsk looked as if out of their latitude. One thing, however, we observed, and that is the hardness of the *Pavia*s or smooth-fruited Horse Chestnuts, and these *Pavia*s, we were told in several places, were European, not American.

ALNUS—Alder.

There are some beautiful shrubs among the Alder. *Imperialis* is said to be the least hardy, and yet I would expect it to thrive in a sheltered city garden in Montreal. *Incana laciniata* has a dull, sombre tint, very unusual; leaves deeply cut, and very ornamental. It seemed, and was said to be, quite hardy in the nurseries at Riga. *Incana pinnatifida* or *acuminata* in the Botanic Garden, St. Petersburg, is a large bush 25 feet in height, with a trunk 12 inches in diameter; foliage dull in color and deeply cut. From my notes it must be very like *Laciniata*. *A. glutinosa oxyacanthafolia* is well named, and, like those above, bears no

resemblance to an ordinary Alder. It is light and airy, and rather pretty, but sparse of foliage, and should be headed in to make it appear to good advantage.

AMELANCHIER—June-berry.

We found nothing of special value, but I must speak of kinds which have already found their way into the West, probably from Europe. A dwarf variety has been grown by a German in Greene, Co. Iowa, for the past 12 years. Mr. Budd who visited the plantation, says "that the plants were literally loaded with a dark, nearly black fruit of good size and excellent quality;" even the sprouts, not more than a foot in height, were bearing. The bushes when full grown were 2 to 3 feet in height, bore fruit the size of black currants, and all this time had been grown and marketed under the impression that they were Huckleberries. This variety was imported from Germany. Another colonist, near Davenport, Iowa, has had 4 acres of a somewhat similar berry, and has produced 50 to 60 bushels in a season from the bearing portion of his plantation. This has been over 20 years on trial, and its origin is not traceable.

Again Mr. Budd draws my attention to the *Amelanchier alpina*, received from Texas, and which is a native of the Andes of Mexico, and apparently quite hardy at Ames, Iowa. It grows a foot or more in height, and has been highly thought of in Texas, where it has been grown as a Huckleberry.

Another variety received the prize of, I believe, \$40 from the Mass. Hort. Soc.

I mention these because they are fruit that should be grown in our climate.

ARIA—White Beam Tree.

This is a medium-sized tree, allied to the Mountain Ash; somewhat like it in blossom, and in the fact that it bears clusters of fruit.

The largest collection we saw was in the grounds of Mr. Wagner at Riga, and of these, *Nivea*, specially struck me, on account of the snowy whiteness of the under side of the leaf. This tree would be specially beautiful in a windy situation. Of others, *Acerifolia* has a very long leaf very much indented, and, I suppose, lobed. *Corymbiflora*, like *laciniata*, an indented rather than a cut leaf. *Cretica*, leaf small, but white on under side. *Eliptica*, very broad leaf, white underneath. *Glabrata*, leaf glossy on upper surface, and quite unlike others. *Lantana*, leaf lanceolate, and white beneath. *Latifolia atroviridis*, leaf larger and broader. *A. lutescens*, of M. Simon-Louis, at Metz, is remarkable for the whiteness of the under, and even of upper, side of leaf.

ARMENICA—Apricot.

Let us add the Apricot to our list of hardy fruits as soon as possible.

Mr. Maximowitch, Curator of the Botanic Gardens at St. Petersburg, who has spent many years botanizing that vast country eastward to the Amur, says that in Soongaria, in Eastern Turkestan, at the eastern end of the Altai range, it is growing in quantity, and that there the boars, and the bears, and the natives, fight it out as to who is to have the fruit. The fruit is small, that is, about one inch in diameter, but sweet, and pretty good.

In the Southern parts of the Province of Mantchuria, there is, says Mr. Maximowitch, a variety of Apricot different from those in cultivation. They do not thrive well near the coast, but in sheltered situations inland they grow in great quantity. They are really good, and are sold in quantity in the Pekin market. Could we not get the pits of this Apricot expressed to us by our Consul at Pekin? Surely this might be done.

AZALEA.

A. MOLLIS has a large salmon-colored flower, a variety brought by Mr. Maxinowitch from high altitudes in Japan. It has proved quite hardy at St. Petersburg. I see that Ellwanger and Barry,

of Rochester, N. Y., speaks of the great beauty of *A. mollis*, but says it is only half hardy and needs protection. What difference in hardness there is in the offspring of plants of different elevations.

BERBERIS—Berberry.

These I have not made notes of. However the seedless Berberry is recommended as an acid little fruit—good for preserves. The Chinese sweet varieties, which are said to be dried like raisins by the Chinamen, I did not see.

BETULA—Birch.

The beauty of the Russian Birches is a matter of general remark by travellers. In general appearance they are not like our own, nor the Birches imported from Western Europe. The *Alba* of Linnæus, or *Pubescens* of Ehrhart, has a leaf in shape like our canoe birch, but smaller and velvety. Sometimes it is very aromatic. It is probably the fastest grown, and is suited to moist soils only, and is the best variety for the far North. The trunk is mostly white, and that almost to the ground. These notes were given to me by a Forester who had made a special study of the question. On the other hand the *Alba verrucosa* is a weeping or drooping tree, with triangular leaf, a leaf like our common White Birch, and when over 10 or 12 inches in diameter of trunk the bark becomes rough and covered with black clefts.

This latter, this weeping form, is the one I wish to draw special attention to. It is the Birch growing upon the dry soil of the Petrovskoe park near Moscow, that park which is the summer resort of the residents of Moscow. The most attractive feature of this park is its avenues, and groves of weeping Birch. Some of these groves seem to have sprung up as though planted irregularly at distances of from 6 to 9 feet apart, each way. Thus the one thing that presents itself is a vista of bright, translucent, white barked trunks. The effect is almost magical, and could not be

produced by plantations of our dull barked Birches. What an attraction to our Mount Royal park such a grove would be. It would become the haunt of our snow-shoe clubs by moon-light, in summer the resort of pic-nic parties and pleasure seekers. How beautiful our Montreal park could be made by the judicious planting of trees of varied form and foliage.

B. DAHURICA, we saw at St. Petersburg an oldish, slow-growing, rough barked tree. *Costata*, too, usually noted as from the Amur. Much like our canoe Birch in bark and leaf, but has a slow growing, stunted look.

CALYCANTHUS.

Some Northern forms, *C. Siberica*, seems quite hardy at the Botanic Gardens, St. Petersburg. Flowers whitish yellow.

CARAGANA.

The most widely popular of the Russian shrubs is unknown, I may say, in Canada. In Western Europe we scarcely notice the Caraganas, except in the Botanic Gardens. In central Europe they become much more generally planted; even in mild climates like Prague, we find them common in the city gardens. It is a plant capable of enduring great extremes of cold and drought; the best shrub for planting on the confines of the cold desert, and therefore widely popular in the cold, dry North.

On the Finland road, that suburb which is the resort of the townspeople of St. Petersburg during their short cool summers, the Caragana is the common hedge plant. It and the red berried Elder the commonest shrubs. In the tea gardens of the Petrovskoe park near Moscow, where the Russians met to enjoy their tea around their hissing samovars, the dividing screens are Caragana. At Moscow and Kazan, it and the Siberian thorn are the common hedge plants.

This arborescent Caragana is known also as the Siberian Pea tree and in France sometimes called acacia de Siberie. It is a shrub

usually from 8 to 15 feet in height, although at Saratof I saw it as much as 30 feet. It has a very small dark leaf, and may be trained to grow in tree form. There are many varieties, some catalogues offer 13 or 14 varieties. The most beautiful to my mind is *Pygmaea pendula*; top grafted, it forms a delicate pendulous head, very graceful and ornamental. I fear there is some confusion in the names given to these varieties. I have seen the names *gracilis*, *microphylla* and *horrifica* given to what appeared to me to be this. *C. ferox* or *spinosa* is spiny, stiffer in growth, and has more foliage; it, too, may be top grafted. Of other kinds I would mention *C. altagana Dahurica*, a straggling bush with leaf smaller than *Arborescens*. *Frutescens*, a good shrubby little bush from the Altai Mountains and Turkestan. *C. jubata* is from Mongolia, and from the cold district of that coldest of all countries, Eastern Siberia. This, however, is positively ugly.

CORNUS -Dogwood.

One variety of the *Cornus* I wish to draw special attention to, the *Cornus alba fol. variegatis* or *C. stricta* of some catalogues. It is a low shrub with bright white margined leaves, very showy and attractive, and perfectly hardy. A very great favorite in the nurseries at Riga, a great favorite wherever known.

There is also a white margined variety of the *Cornus mascula*, very pretty indeed; hardy at Warsaw, but not hardy at Voronesh or Riga. The ordinary *Cornus mascula* is not to say hardy at Riga. At Warsaw, in the Botanic Gardens, we find a tree of it 18 inches in diameter of trunk and 25 feet high, and at least 30 feet across its extended branches.

Andrew S. Fuller in his "Fruit Culturist" recommended the introduction of the *Cornus mascula* as a fruit-bearing bush. At the nurseries of Simon-Louis at Metz, where they have six kinds, the *C. mascula macrocarpa* is considered the largest in size, and the best in flavor. This was corroborated at other places. It is worthy of trial at Toronto and southwards.

CORYLUS—Hazel.

On this I have nothing definite to say. At Vienna we saw a specimen of the *C. colurna* or Tree Hazel, 30 feet in height. Farther South in Turkey it grows to a height of 50 or 60 feet, but is not hardy in cold climates. At Reutlingen Mr. Lucas showed us the fruit of a number of varieties bearing large nuts of different shapes, but I cannot say if likely to prove hardy here. In the extreme climate of Kazan we saw lots of wild Hazel, but the fruit is small; no improvement upon our native species.

Nut culture has been tried at Riga, and Mr. Goegginger suggests that we should try the *Giant de Halle*.

COTONEASTER.

We saw many hardy varieties. In the garden of the Agricultural Academy at Petrovskoe, *multiflora*, *vulgaris* and *lucida* seemed all right. In the Moscow Botanic Garden we saw one variety bearing red berries, and another blue; both seemed quite hardy, so was *lucida*. *Acutifolia* grows to height of 6 feet, and seemed quite hardy at some points in Northern Russia. I saw many hardy forms, but did not take any trouble to look them up.

CRATÆGUS—Thorn.

The Oxyacantha, or Quick, is the common hedge plant of Central and Western Europe. On our way to Russia we passed thousands of miles of this hedge; along the railways, along the road-sides, often separating suburban properties. We began to lose sight of it on the way to Warsaw. However, it is quite hardy there and is grown a good deal, but we cease to find it as a hedge plant beyond Vilna. At Riga it is not hardy, and from thence Northward it is replaced by *Siberica*. On our return journey we find the Oxyacantha again at Kiev, large trees of it in the Botanic Gardens, such as one sees upon estates in England. The hardiness of this plant could no doubt be increased by getting seed from its North-Eastern limits of growth.

The *Siberica*, or rather *C. sanguinea* of Siberia, is a good hedge plant. Much like some of our own thorns, but I think of rather faster growth. Good hedges of it at Riga 10 feet high. In the College Gardens at Petrovskoe, Mr. Shroeder points it out as perfectly hardy, so too is *Crus-gali*. *Nigra* also is all right. *Mono-gama* has a pretty cut leaf, and is fairly hardy, not as hardy as the above.

CYTISUS—Laburnum.

Here again are some hardy forms although the same species from Scotland will not endure our cold winters.

In the Botanic Gardens at Munich we found *Alpinus* growing to a height of over 35 feet, with a dozen trunks from 5 to 12 inches in diameter.

In the severe climate of Orel, in Central Russia, we find a tree of *Alpinus* which seemed quite hardy. The Northern nurseries all grow *Cytisus*, and these hardy varieties are well worth looking up.

ELEAGNUS—Wild Olive.

This is a race of bright silvery-leaved trees and shrubs of great ornamental value.

In the grounds of the Pomological School at Proskau, we find a shrub three feet high, with gray, silvery leaves three inches long and an inch or more wide. We saw it again in the Botanic Garden at Moscow, apparently hardy. It was not named. This is very ornamental and should not be lost sight of.

E. angustifolia. In moderate climates this grows to a large size. At Warsaw we find a tree two feet in diameter of trunk and 30 feet high, old, and on its decline. In the cold climate of Orel we saw a tree 35 feet in height, but I do not remember it farther north. It has long narrow leaves, white on under side, bright and pretty. Of its blossom and fruit I cannot speak.

E. longipe, of Japan, we saw at Kew; a shrub six feet high, bearing large quantities of spotted red berries, like oblong cran-

berries. At Verrieres, in the garden of M. Henri de Vilmorin, we again see this plant bearing heavily; fruit red, a nice acid fully equal to cranberries, and as free from seed. It seems a very abundant bearer, and well worthy of introduction as a fruit-bearing plant—a plant likely to yield quite as much of a fruit as good and as salable as cranberry. The only question is its hardiness. It should be tried with us in sheltered corners, where the snow drifts would be likely to cover it. In many nurseries this is known as *E. edulis*.

FAGUS—Beech.

The European Beech is not as hardy as our native species. It will not thrive at St. Petersburg, whereas our own is found 50 miles north of the city of Quebec. I observed, however, that the cut-leaved beech (*F. syl. incisa*) is hardier than the purple-leaved, and may be tried in rather severe climates. There is a very fine specimen of the cut-leaved in good health on the grounds of Mr. Wagner at Riga.

FRAXINUS—Ash.

The Foresters in Russia prefer the American ash to their native species. So do the Forest Schools in Western Europe. The *excelsior*, however, grows to greater size; one in the Botanic Gardens at St. Petersburg rises from the ground with six trunks from 5 to 15 inches in diameter. The American is said at several different points to be the hardier. This seems strange, for at the Botanic Garden at Kazan we were told that *excelsior* was indigenous in that government. The variegated form of our native ash (*F. Am. aucubaefolia*) we find at Moscow and other places. The single leaved ash (*F. exc. monophylla*) has grown to the height of 20 feet in the Moscow Botanic Garden, and seems quite hardy, whereas little trees of mine at Abbotsford suffer. The weeping ash (*F. exc. pendula*) is fairly hardy at Riga. The young shoots are sometimes injured there. *F. juglandifolia sub-intermedia* may be

seen in the Botanic Garden, St. Petersburg; a tree 25 feet in height and apparently quite hardy. *F. Mantchurica*, a fine tree, quite hardy at St. Petersburg, and grows to a diameter of three feet in its native land.

GLYCYRRHIZA.

G. ECHINATA.—A shrub like a Bastard Indigo, bearing large balls of rough tufted seeds. A very curious shrub, which we saw in the Botanic Gardens at Kazan.

G. GLABRA is not so striking.

HIPPOPHAE.

The grey silky foliage of these shrubs makes them very attractive. Are they hardy? I asked Dr. Regel. "I received them from Central Europe and they proved tender; I then procured seed from Siberia, botanically the same, and they are quite hardy." Such was Dr. Regel's reply, the same old story, his experience and mine, as far as I may be said to have any.

The *Hippophae salicifolia*, which we saw at Proskau, was much like a Rosemary Willow, and lacking in that white lustre which others usually have. *Siberica* is more like the *argentea* of Proskau, bright and very ornamental.

LARIX—Larch and Tamarac.

In the Riga nurseries we first saw *Siberica* and *Europaea* growing side by side. *Siberica* much the faster grower in nursery, foliage slightly longer, more fringy, and clothing the branches better than on *Europaea*. This larch was from the Ural Mountains. Again at the Petrovskoe Academy there is a very fine avenue of *Siberica*, a quarter of a mile or half a mile long. The foliage very light in color; the outline much less sharply conic than other varieties. An avenue of even-sized trees about 30 feet in height. In the Botanic Gardens at St. Petersburg we see it in old age, a few old trees about 70 feet high. Alongside of it is

Dahurica, of equal size and age, but different in this way, that at a certain height *Dahurica* usually forms two or more trunks; it is just as ornamental, but on this account not equal as a timber tree. In the far North, on the border of the tundra, *Dahurica* is a small stunted tree. Many years ago the Duke of Athol had imported Larch seed from the forests to the South of Archangel. This proved inferior in growth and in quality of wood, and led us to suppose that there was no larch in the Russian forest equal to *Europaea*, which is that of Central Europe. The Duke of Athol's seed, too, may have been obtained from stunted specimens on the Northern limit of its growth.

The *L. Kæmpheri* of Japan, Mr. Wagner, of Riga, says is not hardy at Berlin.

MAGNOLIA.

Mr. Maximowitch tells me that the *Hypoleuca*, if the seed be procured from Hakodati, on the Island of Yezo, might be worth trying in rather severe climates. It becomes a large tree, and, I think, has a large blossom. The *M. Kobus* is less beautiful, but probably still hardier.

MORUS—Mulberry.

We made many inquiries about the Russian Mulberry but could hear nothing of it in the colder climates. At Voronesh, in the Botanic Gardens, we saw a variety in leaf much like it, though there not valued. In Odessa there are large Mulberry trees, we are told, and in the Botanic Garden in Vienna, we saw not only large trees of *Alba*, but a specimen of *Tartarica*, 14 inches in diameter of trunk and 25 feet high. The Russian Mulberry, however, as known in the States, is on extensive trial in the cold climate of Cottonwood County, Minnesota. It has been visited by Horticulturists, and we shall soon have opinions upon its probable value.

Mr. Maximowitch suggests that we should try the Mongolian Mulberry, if we can manage to get it.

PANAX.

P. SESSILIFLORUM.—A shrub or small tree from Amur, well worth introducing. There is a specimen in the Botanic Gardens, St. Petersburg, about 15 feet high, and Mr. Maximowitch tells us that it blossoms well there, but does not mature its fruit. It grows in Mantchuria, but not North of lat. 49°.

PHELLODENDRON.

Mr. Goegginger, of Riga, tells us that in the Botanic Garden at Dorpat, half way between Riga and St. Petersburg, there is a tree of this variety 8 to 12 inches in diameter of trunk, and 25 feet in height. Again, at Orel, in Central Russia, we find a young tree about 15 feet. Clearly hardier varieties than those now grown in United States. The tree I have at Abbotsford kills back every winter.

POPULUS—Poplar.

The poplar is our most valuable tree where quick shade is needed. Different species abound in varieties; some of the best we have not.

P. ALBA.—The silver poplar is a tree of very wide habitat; the varieties indigenous in cold, dry regions we have not tried. In the Botanic Garden at Kazan, there is a row of 11 trees, in all in the garden 20 trees, about 18 inches in diameter of trunk; trunk straight and tapering, the leaf larger than our varieties, and acerifolia only where making strong growth. The quality of the wood of the white poplar is well known, but the trouble is the difficulty of getting a straight piece from the Western European form. On dry soils the White poplar we have, becomes very small in leaf, and looks unhappy, while the varieties we find on the Volga, maintain a large acerifolia leaf and good growth on very dry soil, and stand severe drought better than any of the Siberian poplars, better than any other tree we find there except the wild Volga pear. Cuttings from Kazan and other points in Eastern

Russia should be obtained, for these straight-trunked, drought-resisting, white poplars are very important, both as timber and ornamental trees.

In the collection at Verrieres, near Paris, planted by the late M. de Vilmorin, two varieties maintain this straight trunk.

Of the *erect* forms of white poplar, that which we find in the nurseries under the name of *Bolleana*, and said to be from Tashkent and Samarcand, seems the same as that at Busy Institute introduced by Prof. Sargent, and described by me last year as a species from Turkestan; a deeply cut-leaved silver poplar, as erect when young as a Lombardy; a decided acquisition. I am told by those who have been at Astrachan, that the common white poplar along the Volga, from Tsaritsin to Astrachan, is upright like the Lombardy,

Such are the variations in poplar seedlings, that in dealing with them we must consider that we are dealing with approximations. The *P. alba* and the *P. alba nivea* in the different Botanic Gardens of Central Europe all differ somewhat.

At Kew there is a grand specimen of *alba pendula*, three feet in diameter of trunk; a lofty tree of fine weeping form. There is an *alba pendula* in the catalogues of Riga, and I think Metz, but I have not seen it.

P. MONILIFERA.—This is the most largely planted tree in Northern and Eastern France, the most common country roadside tree in Central Europe. Not only along the road-sides, but, especially in France, along all sorts of imaginary lines across the fields we find it in single rows, with side branches trimmed up and cut as they grow for faggots and even for sheep feeding. Loudon queried as to whether it was introduced from Canada or Virginia. At any rate Botanists seem to say it came from this continent. This favorite tree, with some variation in form, is our own native Cottonwood; universally planted in the North-Western States, valued in Europe, scarcely known and never planted, I may say, in this province. A most valuable, though an

over-looked tree. Its wonderfully rapid growth at Abbotsford has begun to attract notice there.

P. NIGRA.—At Warsaw some of the roads are lined with grand old trees of what is there known as the *Vistula poplar*. We saw large spreading trees 60 or 70 feet in height, with a leaf much like our Cottonwood, and with bark rough except on limbs less than 5 or 6 inches. In the Botanic Gardens at St. Petersburg are two immense trees, one nearly six feet in diameter, now in a state of decay, and said to have been planted by Peter the Great. However, at Riga and other places this tree is not a favorite on account of its tendency to decay or kill back in the tops of the branches, both on dry and moist soil, and as we get into severer climates trees of this variety are often very unsightly, and thus it is not a favorite as is *Monilifera*.

A very different tree is the *Nigra* of the Botanic Gardens at Munich. A tall tree of small diameter, not spreading, and with very small leaf. A good healthy tree, unlike others, and worthy of trial. According to the *Flora Rossica*, by Dr. Ledeborn, the *Populus Nigra* is a native of Lithuania, Moscow, Kazan, the Caspian desert, Southern Siberia, and the Altai. For some reason the Siberian *Balsamifera*s have been planted instead of it in Eastern and Middle Russia.

P. EUGENI.—This is a hybrid between *fastigiata* (or Lombard poplar) and *monilifera*; so we are told by Messrs. Simon-Louis at Metz, who have a very large collection of the poplars of Central Europe and who seem to have made them a special study. In the Botanic Garden at Nancy there is an immense tree with a straight trunk between five and six feet in diameter, growing to a great height, with branches somewhat pendulous. Certainly the poplar is a grand tree.

P. TREMULA.—Our own aspen is the poorest tree we have, so short lived. The Russian form grows to much larger size, and does not appear to be short lived. In Botanic Gardens at Munich there is a high, narrow, small leaved *Tremula*, much like the Munich *Nigra*. A good tree.

ASIATIC POPLARS.

Under this vague heading, for want of a better, I will group a race of poplars hardly known to us; trees better suited to dry, cold climates than those of the monilifera and nigra types, at least one would suppose so from the fact that they are the street and garden trees from Moskow to Kazan, and South to Saratof, and in middle Russia. They do well on dry soils, yet do not maintain anything like the same healthy foliage during extreme drouth as the Volga forms of the Silver poplar. Neither are they trees of great size, at least not in their native climates. They seem related to our Balsamifera or Balm of Gilead, yet have leaves not pubescent but smooth and whitish on the under side, and in some forms singularly narrow.

P. LAURIFOLIA.—This, Mr. Maximowitch tells me, is a medium sized tree, usually 30 or 40 feet in height, and one foot in diameter of trunk, as growing on the Altai Mountains. Mr. M. had seldom seen it larger. It is a common street tree in North-Eastern Russia. It is a fast grower, has narrow leaves curled very much on their edges, and has angulated branches. A specimen in the Botanic Gardens at St. Petersburg is nearly 50 feet in height, and I understood it to be but 26 years planted. It seems to be a faster grower than Suavolens.

P. SUAVOLENS is a native, says Mr. Maximowitch, of very cold districts in Eastern Siberia, also of Kamtschatka and the islands of the coast. It grows to a height of 50 or 60 feet, with a trunk two or three feet in diameter, and is a good street tree. Branches round.

P. SIBERICA is another variety; foliage slightly broader, and Mr. Wagner, of Riga, says it grows to be a good sized tree. This must be the Siberica pyramidalis of some catalogues, and is, I think, the tree we used so often to see planted in the gardens at the railway stations, and which looked at a distance very like a sweet cherry.

P. BALSAMIFERA in leaf in nursery is just like the above, but is said to grow into a tree of different form. We saw a specimen of it in the Botanic Garden at Kazan 50 feet in height and two feet diameter.

P. SIBERICA SUAVOLENS.—A good sized spreading tree. Mr. Goegginger says like a *Tilia*. Said to grow larger than *S. pyramidalis*.

Of others, *Wobsti*, Mr. Shroder, at Moscow, says, is a large as well as a good tree, with broad leaf. It is said to be from Turkestan. *Petrovskoe*, Mr. Goegginger says, is a Turkestan variety, growing at Petrovskoe, also a broad leaved variety. *Nigra horizontalis*, said to be from Tashkent. *Simonii*, an Asiatic variety with red twigs and a close thin leaf the least like the Balsameas. *Efratica* or *diversifolia* from Turkestan is a curious variety of irregular foliage. So says Mr. Goegginger of Riga, who has the largest collection of these poplars which we saw. *Tristis* is a variety with dark concave, thick, glossy leaf, which sprang up by chance in the Botanic Garden at St. Petersburg.

These varieties are mostly variations of what Pallas called the Siberian *balsamifera*. They will not grow to as large size as our own *Balsam* of Gilead, which here is a lofty tree with a trunk three feet and even four feet in diameter, and which reaches a diameter of 6 to 10 feet on the upper Peace river in the North West. They are, however, so easy of introduction, so easily scattered, they differ so much in foliage and growth, that they must be looked upon as interesting and valuable introductions.

PRUNUS—Plum.

P. PADUS AUCUBAEFOLIA.—*Variegated leaved bird cherry.* This and other varieties quite hardy in the north.

P. MAAKIA.—Hardy at St. Petersburg.

P. SPINOSA.—The dwarf form on the Volga, seldom grows over three feet. I have seen bushes 18 inches high loaded with bright blue little fruit. Very ornamental.

PYRUS—Apple and Pear.

Some very ornamental trees among the wild forms of the apple and pear.

P. *ELEAGNIFOLIA*.—A bright foliaged tree, nearly as white as *salicifolia*, leaf broader and growth more upright and regular. I do not know that it is a tree of northern habitat, still it is hardy at Proscau. We also saw a good specimen of it 8 or 10 in. in diameter of trunk at Warsaw.

P. *SALICIFOLIA*.—The most ornamental of the *Pyrus*; an irregular, eccentric growth, somewhat pendulous, and with branches intertwined in all sorts of ways. The leaf is very narrow, and as white as the *regalis* willow; a strikingly beautiful tree. It is a native of the Ural Mountains, and therefore should prove hardy.

P. *USSURIENSIS*.—The wild pear of the Ussuri in Mantchuria. I am not sure that I saw it. The tree is said to be quite ornamental, the fruit of fair size, but it does not soften even when cooked.

The wild pear of the Volga and of middle Russia, I must mention as the best tree I know of for a cold climate, for maintaining a dark, glossy leaf during extreme drouth.

QUERCUS—Oak.

Tender and unsatisfactory as are some of the English oaks, the *pedunculata* in Russia grows in climates quite as severe as the native oaks of this Province. The foresters tell me that *pedunculata* is indigenous in the Government of Moscow, also, I am told, in the Government of Kazan. From this latitude southward wherever the soil is suitable, this oak has been planted in vast quantity by the Government Forestry stations. Our red oak is a good, fast grower, but the wood is inferior. Our white oak is the very best of wood, but, I was going to say, it grows, but watch a white oak for a few years, and if you believe your eyes you will declare it does not. This Russian *pedunculata* combines good growth with a good quality of wood.

I find the *Q. r. fastigiata*, the upright oak, hardy as far north as Riga. *Q. Mongolica*, a variety with a very small indented leaf, is recommended to us for trial in our cold climate.

RHAMNUS.—Buckthorn.

R. ALPINUS.—A variety with an immense leaf, and quite ornamental. At Riga, Mr. Wagner says, hardy but sometimes slightly injured.

R. CATHARTICUS.—Hardy at St. Petersburg.

R. PALLASII.—A pretty shrub with very glossy foliage, six feet in height. It seems hardy in the Botanic Garden at Moscow.

RHODODENDRON.

The Rhododendrons extend from the Himalayas north, to the Altai, and East to Kamschatka, and are found in some cold regions. *R. Dahuricum* is an evergreen variety with purple blossom, quite hardy at St. Petersburg. It does well on limestone soil. *R. parvifolium*, a smaller and more compact shrub with a small blossom; grows well on peat or without it, and is very hardy far to the north.

RIBES—Currant.

R. Alpinum.—A fruit and an ornamental shrub. The fruit is of fair size, a rich carmine, quite sweet, but with a very slight bitter, yet nice and quite productive it would seem. It is from Siberia. Mr. Shroeder, at the College Gardens at Petrovskoe, seemed to value it highly. In Siberia, not only the currants, but some of the Ioniceras bear fruit, which is gathered for the table, and yet these same varieties ripened in the climate of St. Petersburg are not eatable.

ROBINIA—Locust.

The pseudo-acasia, or *yellow locust*, next to the monilifera poplar, is the most common tree in northern and eastern France. We find it planted along the railroad cuttings and embankments to bind the earth. We find it a common tree in the streets and parks of Paris. We find it planted to cover waste tracts of land.

As we enter Germany we find it a most popular tree in their streets and city gardens.

According to Loudon it was introduced into Europe in 1601 or 1635, and the tree planted at the latter date in the Jardin des Plantes at Paris is still living. A still larger tree, however, is that in the public gardens at Warsaw. This locust has run into endless varieties. The great favorite in Central Europe is a top grafted, rounded variety, which rather, I think, must be the *umbraculifera* or globe acacia. Not quite hardy at Warsaw though grown there. Not likely to prove hardy here.

In Europe this tree does not seem affected by borers, nor does it have the same seedy look when old that it does here. Its wood is most durable and valuable at any age; its growth when young is rampant; it suckers very badly. At Abbotsford we have had no borers, and hence it promises to be the best fence-post and fence-rail tree we have.

ROGERSIA.

This I did not see, but Mr. Maximowitch speaks of it as a pretty shrub, which does well at St. Petersburg. The flower is small, but plentiful.

ROSA—Rose.

I wish to draw special attention to the *Rosa rugosa*, and especially its double form, *flore pleno*, as a shrub perfectly hardy at St. Petersburg and Moscow. In this respect it is pointed out to us as a shrub of unlimited hardiness. It has a pretty double flower, and is a decided acquisition. It is a native of Japan. The *R. villosa pomifera* is so named because it bears a fruit 2 inches in diameter, and which is good for preserves. It is fairly hardy at Riga. It should be planted where likely to be covered with snow. *R. rubrifolia* is a red foliaged shrub. The flower is not special, but I am glad to know that this plant, which I had admired at Busy Institute, is hardy in the North.

SALIX—Willow.

S. ALBA var SPLENDENS.—In the Botanic Garden at St. Petersburg there is a fine specimen of this bright silvery willow, a tree about 15 inches in diameter, and 35 feet high, without any dead wood about it; a tree of great ornamental beauty in contrast with dark foliaged trees like *S. Canifolia*. Throughout Russia we find willows more or less of this shade of color. In France and Central Europe many willows have this bright silvery tint. We intended to try the *alba lucophylla* of Messrs. Simon-Louis, at Metz, until we found at St. Petersburg a variety whose hardiness was already tested for us.

S. ALBA of the Volga.—The first groves of this I saw were on low land on the bank of the Volga, some distance below Nijni Novgorod; lofty trees with straight narrow trunks, growing quite close, and therefore without lower branches. The foliage is quite narrow and feathery, the branches pendulous. Single trees maintain the same straight trunk. At several points on the Volga I asked what variety it was, and was told *Salix alba*. It is also known as "vertla." How different is the *Salix alba* of Western Europe, the great screen, wind-break and snow-break tree of the prairie States. This Volga willow is not suited for these purposes, but is a straight growing timber tree of great height, with feathery foliage.

S. ACUTIFOLIA.—This is the favorite willow for planting to stay drifting sands. In Mantchuria, in the woods, it is a large tree with a trunk 4 feet in diameter, used by the natives for canoes. In cold open exposures it is a mere shrub. It is the best weeper among the willows in the Botanic Garden at St. Petersburg.

Of others, *S. California*, a small, broad leaved, very bright silvery little shrub, quite hardy at Proskau, quite hardy, top grafted even, with Mr. Hoser at Warsaw. *S. cuspidata* becomes a large handsome bush. It has a laurel leaf and yellow twigs, quite hardy at St. Petersburg. *S. fragilis* is, I believe, a widely scattered tree in North Europe and Asia. Large canoes are made of it in Amur. Rather ornamental and quite hardy.

SAMBUCUS—Elder.

An ornamental race of plants, most of which are adapted to cold climates.

S. NIGRA.—We find this as a small or even medium-sized tree in the milder parts of Europe. It has been grown at St. Petersburg, but is tender there. The *S. nigra incisa* which we saw at Prague and similar climates is a very dark, yet feathery cut-leaved shrub of great beauty. I think this is the *Nigra laciniata* of the nurseries at Riga, which is fairly hardy there.

S. RACEMOSA.—The *red berried Elder* is the favorite shrub in Russia; more widely planted than any other, except the *Caragana*; more common than the Mountain Ash, or any other tree bearing ornamental fruit. In the North it bears its clusters of bright red berries in profusion, and decorates the roadsides and gardens, where it is planted. The *S. racemosa seratifolia* is a beautiful cut-leaved variety of it; fairly hardy at Riga, nearly hardy at St. Petersburg. There is also a variety *Plumosa* much like it, and about as hardy at Riga.

SORBUS—Mountain Ash.

As we journeyed from Proskau to Riga, during the first week in August, the Mountain Ash everywhere were full of clusters of bright red berries. This eastern form is not as straight and smooth a grower as the ordinary forms from Western Europe, yet this seems to fruit more heavily, but here is the point, it colors its fruit a month earlier.

TAMARIX—Tamarisk.

This is a beautiful feathery shrub, unlike any other. I was always making enquiries to see if we could not find a really hardy species. The *T. tetandra* is a native of the Altai Mountains, yet needs shelter at St. Petersburg. *Dahurica* is very light in color, and very feathery. Mr. Goegginger, at Riga, finds it a little hardier than *Gallica* or *tetandra*. *Gallica* seems to differ much in hardness. In the Botanic Garden at Moscow it is said to be seldom

covered. In Norway it grows wild in lat. 70° , about as far North as the *sorbus* and the trembling poplar.

We cannot grow the Tamarisk as a tree as in the gardens of the Tuilleries, in Paris, but as a shrub, cut back each Fall, grown in some corner where the snow is apt to cover it, there should be no trouble in the culture of this beautiful plant.

TILIA—Linden or Basswood.

The Linden is a very favorite street and park tree in central and northern Europe. It has long been a favorite, and hence we find avenues of grand patriarchal trees which have been the pride of generations. At Verrieres there is an avenue planted by the late M. de Vilmorin, trimmed inside in the form of a high narrow Gothic arch, with transept, a prolonged Westminster Abbey.

T. *EUROPAEA*.—The linden of western Europe is hardy in Montreal, but its leaf is so fine and thin that it is sensitive to drought, and even in England its foliage is apt to wilt in dry weather. It is a favorite street tree on the Massachusetts coast, yet should not be planted largely in drier regions.

T. *EUROPAEA var PARVIFOLIA*.—As we proceed eastward this becomes the favorite, and finally, in middle and eastern Russia, the only *Tilia*. The first specimen we noticed was at Reutlingen, in Wurtemburg, a largish tree with leaf no larger than an English shilling. It was growing very slowly, the foliage is always larger. At Salzburg, in Austria, the grand old lindens, centuries old, trees 4 or 5' feet in diameter of trunk, were all *parvifolias*. At St. Petersburg the finest street trees are lindens, and I believe most of them *parvifolias*. Here the ordinary *Euro-paea* is known as the *tilia* of Holland. At Moscow *parvifolia* is represented in the Botanic Gardens by a tree with a straight trunk over four feet in diameter. In Kazan we are told that the trade in basswood bark from that region is all from this *parvifolia* variety. Russian foresters view the enormous consumption of basswood bark much as thinking men do here our export hemlock bark

trade, and consider it a destructive industry. Soon some other material will have to be found for peasants' shoes, rope and matting.

Of other varieties, *Nigra*, which we saw in the Munich Botanic Gardens, struck me as being a good tree, with dark, glossy leaf. The *vitifolia*, of the American nurseries, has a good leaf, but I did not see it in Europe. So has *dasytyla*. *Grandifolia* and a host of others have foliage too thin for our dry air. *Begoniaefolia* is not variegated enough to be ornamental, not in dry weather. *Aspenifolia* is a great curiosity, leaves torn and slashed irregularly, folded and indented, with scarcely two leaves alike; quite hardy at Proskau; fairly hardy at Riga. This is sometimes noted as *dissecta*.

Of the *white leaved* lindens, the *American*, which I have noted as a native tree as far north as the Hennepin Islands in Minnesota, is spoken of at Riga as the hardiest tree, and the largest tree. I believe it is rather erect in growth. The *Hungarian*, known there as *pannonica* (I suppose the *tomentosa* of Messrs. Simon-Louis) is not as hardy, not as erect in growth, more bright in color, more ornamental. Further south, at Vienna, in the Botanic Gardens, we find a variety marked *heterophylla*, of Ohio and Mississippi, 12 inches in diameter, semi-upright, more bright and white in foliage than the *T. Argentea* of Hungary alongside. The white leaved European lindens we did not see in the very severe climates. The *alba* of Hungary has not proved hardy with me at Abbotsford, still less so the *alba pendula* which winter kills at Riga. So we had better try the northern forms of the American white lindens.

ULMUS—Elm.

In Europe they have overlooked the grandest of all American trees, the white elm, a tree that thrives in climates even more severe than St. Petersburg and Moscow.

The *campbelli* is not indigenous at St. Petersburg, as I had said, nor is it hardy there, but *Effusa* is. In the southern part of the Government of Moscow, both *effusa* and *montana* are found

wild, but the northern limit of *campestris* is yet further south. *Effusa* is a good and a hardy tree but I never saw one of large size. At Petrovskoe, Moscow, Mr. Shroeder showed us a fine specimen of *effusa pendula*, so my notes say, but I have forgotten it. *Montana*, or the so-called Scotch elm, is not so hardy there or at St. Petersburg. Some weeping forms of it of the Camperdown type, seemed quite hardy at Riga, and were very graceful and ornamental. Their pendula should rather be named *horizontalis*. They have a fine specimen in one of their public gardens, eight inches or more in diameter of trunk. Another is quite pendulous. We are much in need of a tree of this kind a little hardier than camperdown. *U. montana exoniensis* is very erect in growth, has large curled leaves clinging around the stem—both odd and ornamental. *U. m. Damieri* is much like it, but said by Mr. Wagner to be less hardy. *Adantifolia* is like the *urticaefolia* of the American nurseries, but even more crinkled, and its recurved serrations are very curious. The *U. suborosa* (?) of Turkestan, is a small leaved variety, not hardy at Moscow.

Under the name of *Siberica* are several varieties unlike one another, and quite unlike that described by me last year.

Notes on Evergreens, I regret I am unable now to prepare.

In conclusion, I would say that I have written these notes when pressed with other work, but felt it was necessary that they may appear at once, that whatever is of value to us, should be imported this coming autumn; for orders of plants from points North and East of Warsaw must be shipped in the fall.

Seeds can be sent from or to Russia in bags under 8 oz. Scions I have sent safely to Warsaw by mail; and scions sent by mail from Riga arrived in fair condition. Letters to Central and Eastern Russia (Moscow excepted) should be addressed in Russian.

As an amateur, I cannot continue to give up to this work the time I have given in the past. My part has been an endeavour to show our Governments and our Horticultural Societies what may, what should be done.

Let us carefully watch the work now being carried on by Mr. Budd, at the State Agricultural College at Ames, Iowa—work of the highest value to the cold climates of Canada; that work which made our trip to Russia a necessity, that is, a necessity to fair progress; a trip which enabled me in part to see with his eyes, and give you in some degree the results of his study and observations.

Let us then follow out this scheme of interchange with our corresponding climates in the old world. The work has some difficulties. However, as we have the North-Western States and the Russians as our allies, the difficulties may be overcome to one great and mutual good.



